Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A mask generation process for use in encoding audio data, including:

generating linear masking components from said audio data;

generating logarithmic masking components from said linear masking components; and

generating a global masking threshold from the logarithmic masking components.

2. (Original) The mask generation process as claimed in claim 1 wherein said step of generating linear masking components includes:

generating linear components in a frequency domain from said audio data;

selecting a first subset of said linear components as linear tonal components; and

selecting a second subset of said linear components as linear non-tonal components.

3. (Original) The mask generation process as claimed in claim 2, including generating sound pressure levels from said linear components using a second-order Taylor expansion of a logarithmic function.

4. (Original) The mask generation process as claimed in claim 3, including generating a normalized value corresponding to an argument of said logarithmic function, and using said normalized value in said Taylor expansion.

5. (Currently Amended) The mask generation process as claimed in claim 4, including:

generating said normalized value x for said argument Ipt, according to:

$$Ipt = (1-x)2^{m},\ 0.5 < 1-x \leq 1$$

and using a second order Taylor expansion of the form

$$\ln(1-x) \approx x - x^2/2$$

to approximate said logarithmic function as:

$$\log_{10}(Ipt) \approx \left[m * \ln(2) - \left(x + x^2/2\right)\right] * \log_{10}(e)\underline{.}$$

6. (Original) The mask generation process as claimed in claim 2 wherein said step of generating a global masking threshold includes:

decimating said linear tonal components and said linear non-tonal components; and

generating masking thresholds from the decimated linear tonal components and the decimated linear non-tonal components.

7. (Original) The mask generation process as claimed in claim 6, wherein said step of generating a global masking threshold includes determining maximum components of said masking thresholds and predetermined threshold values.

8. (Original) The mask generation process as claimed in claim 7 wherein said global masking threshold is generated according to:

$$LT_g(i) = \max\left[LT_q(i) + \max_{j=1}^{m}\{LT_{tonal}[z(j), z(i)]\} + \max_{j=1}^{n}\{LT_{noise}[z(j), z(i)]\}\right]$$

where i and j are indices of logarithmic power components, $z(i)$ is a Bark scale value for logarithmic power component i, $LT_{tonal}[z(j), z(i)]$ is a tonal masking threshold for logarithmic power components i and j, $LT_{noise}[z(j), z(i)]$ is a non-tonal masking threshold for logarithmic power components i and j, m is the number of tonal logarithmic power components, and n is the number of non-tonal logarithmic power components.

9. (Original) The mask generation process as claimed in claim 1 wherein said logarithmic masking components are generated using a second-order Taylor expansion of a logarithmic function.

10. (Original) The mask generation process as claimed in claim 1, including generating masking thresholds from said logarithmic masking components using a masking function of the form:

$$vf = -17 * dz,\ 0 \le dz < 8.$$

11. (Original) The mask generation process as claimed in claim 1 wherein said linear masking components include linear energy components, and said logarithmic masking components include logarithmic power components.

12. (Original) The mask generation process as claimed in claim 1 wherein said process is an MPEG-1 layer 2 audio encoding process.

13. (Original) A mask generation process for use in encoding audio data, including:

generating logarithmic masking components; and

generating respective masking thresholds from the logarithmic masking components using a masking function of the form:

$$vf = -17 * dz,\ 0 \le dz < 8.$$

14. (Original) A mask generation process for use in encoding audio data, including:

generating logarithmic masking components; and

generating a global masking threshold from the logarithmic masking components according to:

$$LT_g(i) = \max\left[LT_q(i) + \max_{j=1}^{m}\{LT_{tonal}[z(j), z(i)]\} + \max_{j=1}^{n}\{LT_{noise}[z(j), z(i)]\}\right]$$

where i and j are indices of spectral audio data, $z(i)$ is a Bark scale value for spectral line i, $LT_{tonal}[z(j), z(i)]$ is a tonal masking threshold for lines i and j, $LT_{noise}[z(j), z(i)]$ is a non-tonal masking threshold for lines i and j, m is the number of tonal spectral lines, and n is the number of non-tonal spectral lines.

15. (Original) A mask generator for use in encoding audio data, comprising:

means for generating logarithmic masking components; and

means for generating respective masking thresholds from the logarithmic masking components using a masking function of the form:

$$vf = -17 * dz,\ 0 \le dz < 8.$$

16. (Original) An audio encoder, comprising:

means for generating linear masking components from said audio data;

means for generating logarithmic masking components from said linear masking components; and

means for generating a global masking threshold from the logarithmic masking components.

17. (Original) A computer readable storage medium having stored thereon program code that, when loaded into a computer, causes the computer to execute steps comprising:

generating linear masking components from said audio data;

generating logarithmic masking components from said linear masking components; and

generating a global masking threshold from the logarithmic masking components.

18. (Original) A mask generator for an audio encoder, said mask generator comprising:

means for generating linear masking components from input audio data;

means for generating logarithmic masking components from said linear masking components; and

means for generating a global masking threshold from the logarithmic masking components.

19. (Original) A psychoacoustic masking process for use in an audio encoder, comprising:

generating energy values from Fourier transformed audio data;

determining sound pressure level values from said energy values;

selecting tonal and non-tonal masking components on the basis of said energy values;

generating power values from said energy values;

generating masking thresholds on the basis of said masking components and said power values; and

generating signal to mask ratios for a quantizier on the basis of said sound pressure level values and said masking thresholds.

20. (Original) An MPEG-1-L2 encoder, comprising:

means for generating energy values from Fourier transformed audio data;

means for determining sound pressure level values from said energy values;

means for selecting tonal and non-tonal masking components on the basis of said energy values;

means for generating power values from said energy values;

means for generating masking thresholds on the basis of said masking components and said power values; and

means for generating signal to mask ratios for a quantizier on the basis of said sound pressure level values and said masking thresholds.

21. (New) The MPEG-1-L2 encoder of claim 20, wherein the encoder is configured to generate a normalized value x for an argument Ipt, according to:

$$Ipt = (1-x)2^m,\ 0.5 < 1-x \leq 1$$

and using a second order Taylor expansion of a form

$$\ln(1-x) \approx x - x^2/2$$

to approximate a logarithmic function as:

$$\log_{10}(Ipt) \approx [m * \ln(2) - (x + x^2/2)] * \log_{10}(e).$$

22. (New) An audio encoder, comprising:

a bit stream generator; and

a mask generator configured to:

generate linear masking components from audio data;

generate logarithmic masking components from the linear masking components; and

generate a global masking threshold from the logarithmic masking components.

23. (New) The audio encoder of claim 22 wherein the mask generator is configured to generate the linear masking components by:

generating linear components in a frequency domain from the audio data;

selecting a first subset of the linear components as linear tonal components; and

selecting a second subset of the linear components as linear non-tonal components.

24. (New) The audio encoder of claim 23 wherein the mask generator is configured to generate sound pressure levels from the linear components using a second-order Taylor expansion of a logarithmic function.

25. (New) The audio encoder of claim 24 wherein the mask generator is configured to generate a normalized value corresponding to an argument of the logarithmic function, and use the normalized value in the Taylor expansion.

26. (New) The audio encoder of claim 25 wherein the mask generator is configured to generate the normalized value x for the argument *Ipt*, according to:

$$Ipt = (1-x)2^m,\ 0.5 < 1-x \leq 1$$

using a second order Taylor expansion of the form

$$\ln(1-x) \approx x - x^2/2$$

to approximate the logarithmic function as:

$$\log_{10}(Ipt) \approx \left[m * \ln(2) - \left(x + x^2/2\right)\right] * \log_{10}(e).$$

27. (New) The audio encoder of claim 23 wherein the mask generator is configured to generate the global masking threshold by:

decimating the linear tonal components and the linear non-tonal components; and

generating masking thresholds from the decimated linear tonal components and the decimated linear non-tonal components.

28. (New) The audio encoder o f claim 27 wherein the mask generator is configured to generate the global masking threshold by determining maximum components of the masking thresholds and predetermined threshold values.

29. (New) The audio encoder o f claim 28 wherein the mask generator is configured to generate the global masking threshold according to:

$$LT_g(i) = \max\left[LT_q(i) + \max_{j=1}^{m}\{LT_{tonal}[z(j), z(i)]\} + \max_{j=1}^{n}\{LT_{noise}[z(j), z(i)]\}\right]$$

where i and j are indices of logarithmic power components, $z(i)$ is a Bark scale value for logarithmic power component i, $LT_{tonal}[z(j), z(i)]$ is a tonal masking threshold for logarithmic power components i and j, $LT_{noise}[z(j), z(i)]$ is a non-tonal masking threshold for logarithmic

power components i and j, m is the number of tonal logarithmic power components, and n is the number of non-tonal logarithmic power components.

30. (New) The audio encoder of claim 22 wherein the mask generator is configured to generate the logarithmic masking components using a second-order Taylor expansion of a logarithmic function.

31. (New) The audio encoder of claim 22 wherein the mask generator is configured to generate masking thresholds from the logarithmic masking components using a masking function of the form:

$$vf = -17 * dz,\ 0 \leq dz < 8.$$

32. (New) The audio encoder of claim 22 wherein the linear masking components include linear energy components, and the logarithmic masking components include logarithmic power components.

33. (New) The audio encoder of claim 22 wherein the encoder is MPEG-1 layer 2 audio compliant.

34. (New) An audio encoder, comprising:

a bit stream generator;

a filter bank;

a quantizer; and

a mask generator is configured to:

generate logarithmic masking components; and

generating respective masking thresholds from the logarithmic masking components using a masking function of the form:

$$vf = -17 * dz,\ 0 \leq dz < 8.$$

35. (New) An audio encoder, comprising:

a bit stream generator;

a filter bank;

a quantizer; and

a mask generator is configured to:

generate logarithmic masking components; and

generate a global masking threshold from the logarithmic masking components according to:

$$LT_g(i) = \max\left[LT_q(i) + \max_{j=1}^{m}\{LT_{tonal}[z(j), z(i)]\} + \max_{j=1}^{n}\{LT_{noise}[z(j), z(i)]\}\right]$$

where i and j are indices of spectral audio data, $z(i)$ is a Bark scale value for spectral line i, $LT_{tonal}[z(j), z(i)]$ is a tonal masking threshold for lines i and j, $LT_{noise}[z(j), z(i)]$ is a non-tonal masking threshold for lines i and j, m is the number of tonal spectral lines, and n is the number of non-tonal spectral lines.